DOCUMENT RESUME

ED 271 206 PS 015 863

AUTHOR Linder, Ronald
TITLE Architectural Considerations for an Educational Research Center for Child Development (ERCCD).
PUB DATE 14 Nov 85
NOTE 35p.; Paper presented at the Annual Meeting of the National Association for the Education of Young Children (New Orleans, LA, November 14-17, 1985).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Architectural Programing; Architecture; *Building Design; *Classroom Design; *Design Requirements; Naturalistic Observation; Postsecondary Education; *Space Utilization; *Structural Elements (Construction)
IDENTIFIERS Architect Role

ABSTRACT

Architectural considerations and recommendations to facilitate the work of an Educational Research Center for Child Development are presented. The purposes of the center are to demonstrate model programs for children, train student and child development professionals, and facilitate and disseminate research on young children. Program demonstrations could be facilitated by the construction of observation areas such as open decks and classrooms equipped with one-way glass with appropriate classroom design and furnishings. Training of students and professionals could be aided by construction of tutoring rooms for individual and small-group activities and a combined seminar room/library outfitted with movie screens, video equipment, and a one-way window to provide a view of the demonstration room. Since the center functions as a research facility, microphones and audio equipment could be permanently installed in classrooms to monitor children's speech. Other suggestions concern the design of office space, lounges, and reception areas and of nursing, laundry, and kitchen facilities to meet the special needs of children. Also discussed are building location, access for the handicapped, and provision for future expansion. (DR)

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ARCHITECTURAL CONSIDERATIONS FOR AN EDUCATIONAL RESEARCH CENTER FOR CHILD DEVELOPMENT (ERCCD)

Presented at the National Association for the Education of Young Children, New Orleans, November 14, 1985

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By: Dr. Ronald Linder
Professer, Early Childhood Education

University of South Florida
Tampa, Florida 33620

TABLE OF CONTENTS

		Page
I.	Three Purposes of an ERCCD	1
	Develop and demonstrate model programs for young children.	
	Training for university students and others interested in working with young children.	
	Facilitate and disseminate research on young children.	
II.	Demonstrate Model Programs	3
	A. Types of Observation	3
	One-way glass from special observation rooms.	
	Screened observation rooms.	
	Open observation decks.	
	Open access to the classroom.	
	B. Classrooms	5
	Square footage and pupil teacher ratio	
	Storage	
	Shape of classroom-ceiling height-color and light	
	Movable and built-in furniture compatibility	
	Toilet facilities	
	Use of vertical space	
	Windows, walls, floors and ceilings	
	Isolated spcares for children	
	Overall recommendations on the classroom	
	C. Multipurpose Rooms	12
	D. Indoor-Outdoor Compatibility	13
	Outdoor patio	
	Playground ideas	
III.	Training	17
	Tutoring rooms/teacher office	
	Seminar room/library	
IV.	Research	
	Microphones in the classroom	20
	Large demonstration room and observation room	
	Small testing rooms and observation	
	Offices for researchers	
V.	Auxiliary Areas	23
	Reception area - secretary	
	Directors' offices	
	Teacher offices, workroom and lounge	
	Nursing facilities	
	Central kitchen	
	Washer-dryer room	
	Mehanical room	
	Storage rooms	
	Adult washrooms	

		Page
VI.	General Considerations Location Compatibility with other buildings on campus and general building codes Entrance for children Aesthetics and acoustics Energy efficiency and climate control Handicapped access Design for future expansion Working with the architect	27
VII.	Bibliography	31
VIII.	Appendices Selected school designs (From Morrisseau, 1972)	

I. THREE PURPOSES OF AN ERCCD

A. Develope and demonstrate model programs for young children

The daily program is a culmination of research and a center's beliefs about children. It is the philosophy in action. Not only are university centers to demonstrate good practice, they need to continue to expand knowledge about children through inventing and evaluating new approaches, particularly as those approaches relate to the center's philosophy. Since many visitors could be expected to visit these centers, the facility must provide adequate observation without too much disturbance to the ongoing activities.

B. Training for university students and others interested in working with young children

Our universities are interdisciplinary. Children are not the business of only those in Education, but those from Psychology, Sociology, Physical Education, Communicology, Nursing, and Pediatrics as well. The ERCCD center must be able to provide practicum experiences for students from all of those disciplines. In addition, day care personnel and parents from the surrounding communities have special needs for training. The facility should be planned to provide for those needs as well. Therefore, a seminar room with adjoining demonstration area would be a priority for workshops, observation of teaching procedures, or for discussions after visitations to the children's areas.

C. Facilitate and disseminate research on young children

A third purpose of an ERCCD is to provide a place for faculty and graduate students from any discipline to do research on young children. The

building, then, needs to provide testing rooms, visiting faculty offices, and electronic capabilities for the collection of data.

Buildings should be designed to facilitate these three main purposes of an ERCCD. This paper will use these goals to delineate the options that we, as educators, can bring to the attention of architects as we are planning for new buildings or remodeling old ones.

II. DEMONSTRATE MODEL PROGRAMS

A. Types of observation areas

There are four normal ways that centers have used for observation of their programs.

1. One way glass observation rooms
2. Screened observation rooms
3. Open observation decks
4. Open access to the classroom

There are advantages and disadvantages of each type of observation. One-way glass provides quiet, but it needs microphones in the classroom connected to speakers in the observation room to hear what is happening. The main disadvantage of this method is the isolation that the viewer feels. It is difficult to feel the pulse of the classroom from this vantage point. Visitors to centers which have observation rooms separated by one-way glass from the classroom have noticed that the one-way glass rooms were not used very often in the 1980's, except possibly for storage.

The screened observation rooms are less expensive than one-way glass and the observer usually can hear much that is going on in the classroom without the microphones. But, looking through the screening is very difficult on the eyes and the viewer must remain quiet.

A third approach to observation is the open deck. This type of observation has the disadvantages of the observer being viewed by the children and that one must be quiet. It may or may not use area microphones. The

decks can be high as in a second story catwalk or a few feet above the ground. One center had its office on the second floor with the observation deck outside the office. Another had catwalks around the perimeter of the room.

A fourth and most prevalent approach is the open access to the classroom. This is obviously the least expensive and gets the observer into the action. But, sometimes, visitors disrupt the activities of the classroom.

Recommendation: Observation facilities are a personal choice and all choices have both advantages and disadvantages. The method which we at the University of South Florida may choose is a low open ramp, 4' above the floor leading to an open deck 6' high. Under the 4' ramp would be children's personal belongings. Under the 6' deck would be space for cots and other supplies. The higher deck would be equipped with earphones attached to 4-6 microphones hanging over the various centers in the classroom. That deck will be located between two classrooms to serve as an observation area for either. It will be carpeted to soften the noise and should get the observers more into the activities of the classroom than the one-way glass or the screening. The disadvantage of being seen by the children would not be serious. Children get used to visitors and go about their business. Handicapped visitors who cannot climb the few steps to the deck or those who need a closer view of the action would have open access to the classroom. One center extended a screened observation room from inside to outside so that visitors could observe the children as they were on the playground.

B. Classrooms

Square footage and pupil teacher ratio

Before the Preliminary Finding of the National Day Care Study, (1978), the recommended preschool classroom was to have at least 50 square feet per child and have 25-30 children in each classroom. Classrooms were to be large areas of 1250-1500 square feet plus storage, furniture, bathrooms, etc. The pupil-staff ratio called for several adults in the classroom to handle the children. The 1978 report recommended smaller classrooms and 2 adults per 16 children for 3-4 year olds. That recommendation was supported by a study in Scotland (Neill, 1982) that indicated that children in larger classrooms spent less time on school oriented activities, received fewer adult contacts and more time in aggressive and active play. Additionally, the NAEYC National Academy (1984) recommended an optimum of 2 adults for 16 children ages 3-5. The state of Florida guidelines for State supported facilities provide for a maximum of 40 square feet and a minimum of 34 square feet of open space per child. Using the 40 square feet for 16 children we arrive at an ideal classroom size of 640 square feet plus room for storage, etc.

But, our university centers have different needs. We expect to have extra adults in the classrooms in the form of students in training, observing or collecting research data. Those needs call for a larger classroom space. On the other hand, at the University of South Florida, we are asking for a large outdoor covered patio, an atrium or multi-purpose room, and some shared space by each of two classrooms. It is assumed that small groups of children from each classroom will be using these areas while others are in the regular classroom. Those needs call for smaller classroom space. Budget

considerations are another concern, not only for initial construction, but for financing the ongoing program.

Recommendation: For our purposes, at the University of South Florida, we have requested 40 square feet of classroom space for 20 children or 800 indoor square feet per classroom. A two classroom module separated by an observation deck would contain an additional 600 square feet of indoor space for shared areas, observation, toilet and storage space for an indoor total of approximately 2200 square feet. Each two classroom module would share a 12 feet wide covered outdoor patio stretching the length of both classrooms.

Shape of classroom, ceiling height, color and light

Observation studies indicate that square rooms waste space in the middle of the room because of the normal practice of putting centers along the walls. Long rooms tend to encourage running. Very high ceilings may encourage active behavior while very low ceilings may make the adult appear even larger in children's eyes. The ideal height chosen by the Howard Jones Center at Berkeley was 10 feet high with children's private rooms being 4 feet high (Arroyo, 1981).

Research on colors indicates that red and orange cause tension and excitement, while blue, violet and green encourage calmness. Light colors such as yellow are cheerful while deep colors encourage passive moods. Some have recommended that large surfaces have pastel and soft hues while small surfaces have strong and bright colors (Environmental Criteria, 1971).

Light should be glare free. Large roof overhangs, light colored walls and ceilings, and north facing windows give the most even distribution of

light. Although flourescent lighting irritates some people, it is cooler and more cost efficient than incandescent lighting. The most practical form of lighting is a combination of natural and fluorescent lighting with materials that diffuse or refract the light.

Recommendation: We believe that irregular shaped classrooms with various floor and ceiling heights, light in color, with a combination of natural and fluorescent diffused or refracted lighting will suit our needs best.

Storage

Adequate storage must be included in the plans for the initial building. Over the years, centers tend to gather more and more materials and the needs grow and grow. Storage for all kinds of teaching supplies, cots, children's belongings including tote bags, teacher's materials, and audio-visual equipment are needed. Ideas for storage include boxes or cabinets with wheels, cubbies, drawers, slots, coatracks, lazy susans, pulleys from the ceiling, and closets with shelves, both open and closed.

Recommendation: We have chosen to place the children's belongings under the four feet high observation walkway. Sleeping cots, AV equipment, kitchen utensils and other supplies accessible only to teachers will be under the higher observation deck. Additionally, most windows will come to 24" above the floor with closed and open cabinets built beneath them. There will be other movable bookshelves and built-in work islands with storage underneath.

Movable and built-in furniture compatibility

The recommended height of chairs and tables for 3-4 year old children are 10 inches and 20 inches, respectively. The average standing height for

surface work of this age child is 24 inches. Observation studies of children indicate that 3-4 year olds will choose to spend 1/3 time sitting and 2/3 time standing or lying on the floor (Medd, 1981).

Recommendation: Not more than 10 chairs and three tables will be needed for sitdown activities at any one time. These tables will be rectangular in shape and 20 inches high so they may be placed together to make common work surfaces when needed. All built-in islands and window ledge shelves will be 24 inches high. Other movable tables will be 24 inches high and will be used to expand these permanent stand up work surfaces for children. Open bookcases used to separate children's work areas will also be 24 inches high so they may correspond with the height of the stand up work surfaces.

Toilet facilities

Florida State laws require one child toilet for each 15 children, ages 3-5. These facilities should have easily cleaned surfaces, eight feet high ceilings, and good ventilation. Other States have similar codes. Visitations to various centers indicate that some have indoor access only. Others are located between the classroom and the playground with access from both directions. Some are open to the classroom with no doors. Some are closed. Newer regulations call for handicapped accessibility. Unless there is a wall, they cannot be adjacent to a food preparation area.

Recommendation: Child-sized wall hung toilets are recommended for the ease of cleaning the floor beneath them. It is also recommended that there be access to both the indoor and outdoor areas. Some may choose separate toilets, one accessible only to the inside and one accessible only to the

outside, as the facilities which open both directions have the possibility of children leaving through the wrong door at times.

Use of vertical space

Most centers have one level floor space with movable furniture to provide for flexibility in the size and placement of learning areas. Although flat floors have the advantages of flexibility, are the least expensive to build, and most easily fit the handicapped codes, a variety of levels can enhance the attractiveness of the classroom and have other advantages as well. Children can learn by seeing things from different perspectives.

Lofts and pits are popular ways to use vertical space. Lofts can provide extra area because the space beneath can be used for storage, small group or individual work. Pit areas are normally used for large group activities. Pits take various shapes. They can be circular, semi-circular or rectangular. They can be built in the middle of the room, against a flat wall, or facing a corner. Another recommendation for better use of vertical space has been suggested by one author. That recommendation is for pulleys to be installed from the ceiling to lift furniture out of the way to provide for more flexible use of floor space (Taylor, 1984).

Recommendation: We have opted for a semi-circular, fully carpeted pit facing a quiet corner of the classroom. Observational research indicates that a teacher who is working with a total group at one time has the attention of the children better if the teacher's back is in a corner rather than in the center of the classroom or against a flat wall. We will provide a ramp for wheelchair access.

Windows, walls, floors and ceilings

Although windowless classrooms provide even lighting and energy efficiency, they are not recommended by most teachers who work in them day after day. They want to see the outside. Indeed, observational research on children indicate that children will congregate toward a source of natural light in the classroom, whether by an atrium or comfortable window seat (Medd, 1981). Windows should have large overhangs to keep the glare out and work with the artificial lighting and energy requirements to provide adequate glarefree light. They come in all sizes and all levels from sliding glass doors to ceiling panels. Although sliding glass doors are popular and attractive, they can become a safety problem from children running into them. they also use space that might be used more efficiently for storage cabinets and horizontal display and table surfaces. We have suggested large windows with storage cabinets at 24" heights for stand up table furniture compatibility.

Architects suggest that the floor should be treated acoustically, but not the ceiling (Arroyo, 1981). They suggest using light colored textured ceilings for adequate sound distribution and light refraction. For the flooring, they suggest carpeting which provides a quiet atmosphere and is attractive. Some types of soft materials such as rubber, linoleum or soft vinyl can be used, but not with the effectiveness of good carpeting. Many teachers, while seeing the advantages of good carpeting, prefer the alternative flooring of a soft vinyl with area rugs. They like the flexibility of moving their centers around to fit their programs. And they want the opportunity to have messy activities for the children. Vinyl

flooring is easily cleaned and water resistant. Area rugs can be cleaned or replaced much easier than permanently installed carpeting. Some centers have designed their floors for children to experience walking on various textures such as carpeting, tile, wood, and vinyl in the same classroom.

The walls should have writing and mounting surfaces. They can be used for low and high storage shelf space as well. Some persons are allergic to chalk dust and prefer a type of writing surface that uses water soluble colored markers. Several types of materials used for tackboard are available.

Isolated spaces for children

Children like to isolate themselves at times. Some educators have, therefore, recommended the use of child sized rooms, four feet high with small doors entering the rooms. One author has suggested surrounding the rooms with mirrors at all angles for children to view themselves, to dance, make faces, or explore their own movements. Other spaces can be used for quiet activities, such as a nook or window seat where one can curl up with a good picture book.

Overall recommendations on the classroom

The classroom should be built to facilitate a center's stated philosophy and program based upon knowledge of children's physical, intellectual and emotional growth. The present recommendations call for small classrooms with few children, various levels of floor and ceiling; spaces used for noisy, quiet, messy and dry activities; space for large group, small group, and isolated areas for individual children; compatibility of movable and built in furniture; innovative use of space for storage; use of reflective non glare

light and pastel colors on the larger surfaces; and soft floor surfaces which can be cleaned easily. It would be nearly impossible to include all of our recommendations into one plan.

At the University of South Florida, we have chosen three aspects for our philosophy. We want to encourage the atmosphere of a good home environment, a focus on the arts, and use the child's natural inclination to explore and experiment.

C. Multipurpose Rooms

The addition of a separate room shared by several classes for various activities is becoming more popular in preschool facilities. Usually this room is simply another classroom and takes on no particular architectural features. Recently, a few schools have begun to build covered atriums. Around the atrium will be classrooms, perhaps a central kitchen and an administrative section. The concept of the atrium can take the form of some modern elementary schools media centers which are surrounded by classrooms opening onto them.

Frequently, these preschool multipurpose rooms have physical education equipment in them which is too large or expensive for any individual classroom. They sometimes have mirrors and ballet bars used for dance or creative movement. They also serve as centers for art activities with large tables, sinks, easels, easily cleaned surfaces and a large storage area. Sometimes these rooms are used for assemblies, as audio visual rooms, for music, for exploratory activities, or as a central library.

Multipurpose rooms are expensive to build and they don't generate revenue. Often no one person is in charge of the area, so maintenance can become a problem. Some who have started with these rooms, have dropped the idea in order to convert the space for an extra classroom which would return revenue to the center. On the other hand, multipurpose areas can add to the quality of the educational experiences offered to children if the staff has the opportunity to be highly imaginative in the use of these spaces.

Recommendation: For those centers that can afford it, a covered atrium multipurpose room can add beauty to the facility and an expansion of quality programs for young children.

D. Indoor Outdoor Compatibility

Outdoor patio

An outdoor patio adjacent to the classroom can permit noisy and messy activities such as carpentry or painting to take place where they won't bother others. In Florida, the patio should be covered for two reasons. It protects children who are working on the patio from the rain and the hot sun. The classroom is also protected from the sun's direct rays if large windows are on the adjoining wall.

Centers in some parts of the United States have an additional paved uncovered patio extending beyond the covered area. They use this for many different noisy or lively activities. This is not a particularly useful idea in Florida unless the area is shaded. Sun rays can reflect on the pavement and radiate heat to the covered patio.

Recommendations: It is recommended that the facility be designed to allow the philosophy of the indoor program to extend to the outdoor program as well. To accomplish this purpose, we have chosen to build a 12' wide covered patio extending the length of each two classroom module. That patio would have an enclosed shed at each end for storage of carpentry and garden tools, waterplay equipment and other materials needed outside. There would be low storage cabinets, a water supply for drinking, washing hands and filling containers, and access to a toilet entered from the outside to be used by all children who are on the patio or the playground. Ceiling fans would help cool the area on hot days.

Playground ideas

Playground construction has changed greatly in the past few years. Throughout the United States and some parts of Europe, equipment has changed from the traditional metal slides, swings, teeter totters and climbing bars to all types of large pieces of construction made of logs, old tires, cargo nets, and tube slides. The emphasis on these new devices comes from the desire for safety, aesthetic appeal, socialization opportunities, and fun, as well as for the physical development of the children. Particularly for older children, the junk or adventure playground can spark a child's imagination and creative urge.

Other ideas, some old and some new, are beginning to emerge on the playground scene. Some of these are:

Tricycle paths with curves, hills, bridges, tunnels and various pavement textures;

Material such as bars, barrels, and various other movable equipment used as to make obstacle courses which teach such concepts as in, out, over, under, through, left, right, and behind;

Stages or amphitheatres for drama or other productions which need an audience;

Use of trees and landscaping for beauty and conservation;

Science ponds and nature trails;

Play pits (using a septic system dry well concept for drainage);

Hills for climbing;

Suspension bridges, both swinging and sturdy;

Hard surfaced walls used for grafitti, for mirrors, and/or for bouncing balls against them;

Climbing or balancing ropes;

Greenhouses to demonstrate solar power and for gardening;

Elaborate water and sand tables with dikes, waterwheels, hoses, pumps and locks for moving small boats from one level to another;

Musical fence to be played like a xylophone;

Old vehicles such as cars, trains or airplanes for role playing and climbing.

Recommendations: Again, the outdoor program should supplement the indoor program. Learning should be a critical goal of the entire program, not just the indoors. Other important items to consider are physical development, social development, imagination, and the development of sound values of fair play and protection of the environment. Consideration for the safety of children is prime. There should not be more than an 18" free fall anywhere and areas surrounding equipment should be padded.

A minimum of 200 square feet per child is needed for the playground and more space could be put to good use. The area should be surrounded by a fence. It is a good idea to leave a gate in the fence large enough for a truck to drive through for maintenance and for replacing equipment.

III. TRAINING

One purpose of the ERCCD's which is unique from other centers is the need for training. Training consists of university students or child care providers from several disciplines working directly in the classroom with individual or small groups of children, observing superior teachers in action, learning about research with children and attending seminars and workshops. A facility built for training should include observation facilities in the classroom (already discussed), research and demonstration rooms (to be discussed in the next section), tutoring rooms, and a seminar/library room.

Tutoring room/teacher office

Some centers have small tutoring rooms built into a corner or adjacent to the classroom. These spaces can sometimes double as teacher offices and usually will not need special acoustical treatment like a research or testing room, which is separated from the classroom. The tutoring room could be used for individual or small group activities by our University students in training as they work with one or a small group of children. The rooms normally have glass walls or large windows to permit the teacher to view the children. Bookshelves, adult and child writing space, and closed cabinet space is needed here. If there is a telephone located in the classroom, it probably would be located in the tutoring room.

Seminar room/library

Frequently, university child care centers include seminar rooms in their building design. Those rooms may have closed circuit video to observe the classrooms or demonstration room (see research section) to analyze child

behavior or teaching procedures. Other uses for the room would include regular university class meetings, workshops, group conferences, seminars, or as a professional library and study hall. The room normally is located near the secretary station in the administration area so it can be monitored. Ideally, it should be located next to a demonstration or large research and testing room. The seminar room should be large enough to hold an entire class, but high costs of building may limit the size of this space to 400-600 square feet. It should have video playback, movie screens, a large one-way glass window for viewing into the demonstration room, and shutters to close over the window for soundproofing.

Since the room should be used often, it can double as a professional library for books or learning materials to be checked out to parents or university students. Therefore, either permanent or movable shelves should be incorporated into the design planning.

Recommendations: Special facilities such as seminar rooms, tutoring rooms, observation decks, or special research training facilities cost as much as extra classrooms, generate no revenue, and reduce the number of children that a center can enroll with the same amount of dollars. One school has converted its seminar room into a toddler classroom to help defray the costs of operating the center while surrendering its unique space for special seminars.

On the other hand, universities must build classrooms anyway. Why not build a classroom to study children near the children? And the unique purposes of ERCCD's can be served best when the facility supports training and research. A final reason is that a university who supports these functions

should reap the rewards in a greater number of publications, the quality of training programs, and the added prestige these activities bring.

IV. RESEARCH

Research facilities, like observation and training areas are costly to build and maintain while providing only a small possibility of paying for themselves in the form of research grants. But, they add greatly to the prestige of the university and to the capabilities for understanding children. In looking at the ideal research facility, we would want to have several microphones permanently installed throughout the classrooms, one large demonstration and testing room for groups, small rooms for individual testing, and offices to be shared on a temporary basis by faculty and graduate students gathering research data in the center.

Microphones in the classroom

To study children's language, mental or social development in a normal situation, it is desirable to be able to hear what the children are saying when they are talking to other children when no adult is near. That can be done by installing microphones from the ceiling over several centers in one or more classrooms. In our plan those microphones will be attached to earphones located on the observation deck. The unit on the deck can switch to any microphone to hear particular children. An alternative to installing several permanent microphones is now available from new technology. There are now high quality audio telescope microphones which can focus on a small area several yards away by pointing to a particular spot.

Large demonstration and observation room

This room would be located next to the seminar room in our plans. It would have two large one-way windows, one for large group viewing from the

seminar room, the other for researcher viewing from a small isolated space. These windows should have shutters on each side for sound proofing or for closing off the seminar room when the areas are being used for separate purposes. This room should be approximately 200 square feet in size and be able to hold 7-8 students and one teacher for group demonstration lessons. It should be carpeted and soundproofed. (Even keyholes allow unwanted sounds). There should be room for a permanent and a movable television camera. The microphones and video pickup should lead to speakers and a television monitor in the seminar room as well as to the researchers small observation room. The demonstration room should have a separate entrance from the seminar room.

Small testing rooms and observation

These small testing rooms are for individual testing. The size of these rooms need not be larger than 50 square feet each, but have one-way glass and audio hookup to the observation room. The observation and testing rooms should have separate entrances.

Some research centers have as many as seven of these testing rooms. This seems to be too many. At the times these centers were visited, few rooms were being used. Two small testing rooms should be adequate for most centers.

Offices for researchers

One problem noted from visitations was the lack of office space generally available for those faculty or graduate students doing long range research studies. Two small offices, located near the testing rooms, can serve as temporary workspace to facilitate their efforts at the center. These rooms can be small (80-100 square feet each) and have desks, telephone, filing cabinets and other storage space that can be shared.

Recommendations: If the letter of the law and the mission of a modern university is to be served, we must pay the cost. The facility should be designed to be supportive to research.

IV. AUXILIARY AREAS

Although the classrooms are the most important areas of the school, we must have an administration section including offices and reception area, teacher workroom and lounge, nursing facilities, adult bathrooms, storage space and mechanical capabilities for heating and cooling, and space for maintenance and custodial supplies. Centers which provide their own food need a central kitchen.

Reception area-secretary

The secretarial station needs to be centrally located near the front entrance to the building, near the seminar room to check out library books, near the nurse's area to watch sick children until their parents can come to get them, and near the director's and assistant director's offices. It can have a counter at adult height for standing, at child height for standing or simply a desk, depending upon personal preferences. There should be room for filing cabinets and office storage nearby. There should be space for parents or visitors to fill out information needed by the center. (One center had a smaller scale reception area near the main one for children's role play).

Space for computers, word processors and typewriters is necessary. Those machines may be placed in the open area if security is adequate and if the noise is not too intense.

Directors' offices

There should be at least one and probably two offices for the director and asistant director of a center. The size of these offices will be directed

by the local codes, but 150 square feet of space should be sufficient for the director's office and 100 square feet for the assistant director. Most centers have located the director's office near the entrance to the reception area. That has the advantage of always being availabe to visitors, and the disadvantage of no privacy for confidential matters or little time for completing quiet work. These offices need carpeting, desks, cabinets, tables for conferences and telephones.

Teacher offices, workroom and lounge

Nearly all schools have a special workroom for teachers to prepare teaching materials. Some have lounges. Some have built in teacher offices next to each classroom. Most simply have desks in each classroom.

Some of the newer centers have no desks or offices in the classrooms, but have a suite in the administration area which teachers share. That suite contains one room for kitchen and lounge and an adjoining one for office, workroom and supplies. Those who opt for a suite arrangement believe that when teachers share space, they also share ideas and have a closer working relationship than in those centers where teachers stay in their own classrooms and seldom see one another.

Nursing facilities

Not many centers can afford to have a fulltime or even a parttime nurse. But, there must be a room with cots for sick children. There must be a way to check children for head lice, eye and ear infections, or other abnormalities when they arrive at school. Simple cuts and bruises need immediate treatment as well. Besides space for two cots, filing cabinets, closets, and a sink, it

would be very desirable to have a shower room connected to the nurse's area to wash children who need it.

The staff can be trained to watch for abnormalities at the beginning of each day. The secretary can give minor first aid treatment to children and keep sick children until the parents pick them up. Therefore, it seems wise to build the nurse's station near the reception area.

Central kitchen

Most centers prepare hot lunches for children. Others either have the children bring their own lunches or have the lunch catered. Those who have the lunches catered usually have kitchenettes in the classrooms where children can help prepare their own snacks. Some centers have special lunchrooms used only for eating. Others have children eat in their own classrooms or in a central place also used for other activities throughout the day. One center has a kitchen-seminar room combination. Another has a well equipped kitchen facing the atrium. It serves regular meals, but occasionally uses part of the kitchen facing the atrium for children to prepare their own snacks.

The central kitchen, if built, should be away from the main classrooms and with an entrance to a driveway for delivery of new supplies and for garbage pickup. It needs cabinet storage, refrigerator and freezer storage for food supplies, space for storage of pots, pans, dishes, silverware, etc., quality stoves and ample sinks and dishwasher. And it needs counter space both at adult level and at the children's level. It can be near the mechanical room or washer-dryer room since all of these can be noisy places.

Washer-dryer room

Not all centers have a washer-dryer room. But those who do find it useful for washing children's soiled clothes, towels and other items. If a budget is not tight, a washer-dryer is a good addition to a quality center. The room can be a small closet with doors which open to a hallway.

Mechanical room

This necessary space must be located away from the quieter sections of the school. It contains heating and cooling equipment, electrical switches, fire control devices, and sometimes central vacuum equipment. It should be locked most of the time with only maintenance personnel having access to the room. If it is near the kitchen entrance, then maintenance vehicles can reach both rooms from the same access space.

Storage rooms

As a center gets older, it seems to gather more and more supplies and adequate storage space becomes critical. Separate rooms to hold teaching materials, audio visual equipment, office supplies and custodial provisions are necesssary. Each storage area needs to be built near the location where its supplies can be gathered for most efficient utilization.

Adult washrooms

The typical pattern for a child care center is that there will be many more women than men using the center. Therefore, there must be a much larger space reserved for the women's wash room than for the men's room. Those facilities are normally located in the administrative area and somewhere near the central part of the school.

V. GENERAL CONSIDERATIONS

There are some considerations that apply generally to all centers and others that apply only to ERCCD's. Those are: location of center, compatibility with other buildings on campus, parking and entrances for children, aesthetics, acoustics, handicapped access, energy efficiency, and ways to work with the architect.

Location

Sometimes we can't choose our location. At other times we can. One commercial franchise day care center always places its buildings one block away from a main traffic artery. It is usually on less expensive property, is away from excessive noise and is easy for the parents to drop off their children on the way to work. On the university campus, we like to locate the preschool away from the center of campus, yet have easy access for students or others delivering their children. It would be desirable to have a commuter parking lot nearby. Permanent space for approximately 10 cars for the parents, faculty and students should be sufficient normally. But the larger lot could be used at times when university classes or parents' groups meet.

Lastly, we need a location which has plenty of space for a large playground as well as for possible future expansion. Getting extra space may take some real persuasion on some campuses where child care and research centers for children are in competition with the medical school or other campus expansionists for the limited amount of available property.

Compatibility with other buildings on campus and general building codes

Some universities have certain guidelines as to the type of exterior architectural construction that will be permitted. We must follow those guidelines. At the University of South Florida, we are required to follow 10 different national, state and local codes.

Entrance for children

A one-way circular driveway is the method most often used to deliver and pick up children. The preferred way is for the driveway to have a covered dropoff section so that children will not get wet in inclement weather.

Some centers prefer that the children enter the building through the main office. Other centers prefer that children have their own separate entrances directly to the classrooms so that there is not so much traffic through the administrative area.

Aesthetics and acoustics

It is desirable that an ERCCD be attractive and useful to adults as well as to children. Items of color, natural versus artificial light, glare, ceiling height, carpeting and other aesthetic and acoustical considerations have been discussed previously in the classroom and research sections. All of these items must be taken into account when designing the total building.

Energy efficiency and climate control

Energy efficiency has become very important in the past several years. Experiments with both passive and active solar treatments are somewhat popular

in our part of the country. We see the use of dirt berms, trees, overhanging roofs and windows facing the north as signs of energy conservation. Special insulation materials and high efficiency heating/cooling units, and low energy lighting are popular as well.

Certain authors have recommended that thermostats be placed no higher than the children's heads for best climate control (Arroyo, 1981). The recommended temperature is 72-75 degrees Fahrenheit for sedentary activities and 65-70 degrees for active children while the ideal humidity is 40-60 percent.

Handicapped access

Today's building codes require that facilities be built for access by handicapped children and adults. Therefore, all sidewalks and entrances must have ramps for wheelchair access. Handicapped persons must be able to visit all parts of the center. But, those codes don't negate the construction of stairs to our observation areas or lofts for the children. Those who cannot climb to the observation deck will be welcome on the main classroom floor.

Design for future expansion

Unfortunately, we can't always foresee what changes might need to be made in our center when we are first planning it. And we usually have less money than we need to finish the job. It is sometimes wise to plan for an ultimate expansion, then build the center in phases, leaving space for that future expansion. The first priority should be classroom construction, followed then by additional classrooms, research and administrative sections.

Working with the architect

This is probably the most important item. Choose an architect who can work with you. The days when the client gave input to an architect and later he delivered the plans should be in the past. We who are educators know about the needs of our children and what type of physical environment might help us to accomplish those needs. On the other hand, we shouldn't give the architect one plan that he must follow. We should talk about possible architectural solutions jointly. And we need to have input throughout the design and the building process.

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